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Shinji Takeda

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EXAMINER

GRAYBILL, DAVID E

ART UNIT

PAPER NUMBER

2827

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/785,486	Applicant(s) SHINJI TAKEDA	
	Examiner David E Graybill	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-19, 21-34 and 37-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-19, 21-34 and 37-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                             |                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4-14-4</u> . | 6) <input type="checkbox"/> Other: _____                                                |

The amendment to the claims filed 4-14-4 is non-compliant because it fails to conform to the provisions of 37 CFR 1.121(1)(c)(ii):

If a claim is amended by rewriting such claim with the same number, the amendment must be accompanied by another version of the rewritten claim, on one or more pages separate from the amendment, marked up to show all the changes relative to the previous version of that claim.

Specifically, the amendment is not accompanied by another version of rewritten claim 19, marked up to show the addition of the language "silicon resin, acrylic resin, silicone resin" and the deletion of the language "silicone resin, acrylic resin" at claim 19, line 5, relative to the previous version of claim 19.

Because the response appears to be bona fide, but through an apparent oversight or inadvertence the response is incomplete, and in order to continue to afford applicant the benefit of compact prosecution, the requirement to complete the response within a one month time limit is waived, the amendment is entered, and the claims are examined on the merits.

Applicant is respectfully requested to scrutinize the claims and correct any additional errors.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. See MPEP 608.02(d); 37 CFR 1.81(b); *Bocciarelli v. Huffman*, 109 USPQ 385 (CCPA 1956); *WARNER JEWELRY CASE COMPANY v. WOLFSHEIM & SACHS, INC.*,

68 USPQ 267 (DC WNY 1946); Ex parte HELMERSON, 130 USPQ 244 (PTO 1961); In re Complete Application-Drawing Required, 152 USPQ 290 (ComrPats 1966); and Marks v. Hodgins, 99 USPQ 23 (BdPatApp&Int 1953).

Therefore, the features of claims 49 and 50, specifically, the process comprising the steps of coating a varnish on a carrier film and peeling the die bonding film from said carrier film, must be shown or the features canceled from the claims.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not

accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 17-19, 21-34 and 37-64 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling because, in the amendment filed on 6-30-3, applicant discloses as critical or essential to the practice of the invention the temperature range "100-230°C" – "the organic die-bonding film made in accordance with the present invention must have the property of bonding under the conditions of 100-230°C"; but the claims are not so limited. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Claims 17, 30-34, 37-57 and 64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The nonenabled subject matter is the limitation, "a peel strength of 0.5 kgf/(5 mm x 5 mm chip)." To further clarify, the claimed peel strength expression in kgf/(mm<sup>2</sup> chip) is repugnant to the art accepted expression (see ASTM standard D 903-98) of mass to length, and the determination of

the claimed measure of peel strength in  $\text{kgf}/(\text{mm}^2 \text{ chip})$  is not otherwise disclosed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17-19, 21-34, 37-57 and 64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 17, 30, 51 and 64 the limitation, "a peel strength of 0.5  $\text{kgf}/(5 \text{ mm} \times 5 \text{ mm chip})$ " is incorrect and the scope of the limitation cannot be determined because peel strength is a measure of mass to length, and the claimed peel strength of mass-force to area ( $\text{kgf}/\text{mm}^2$ ) is a measure of pressure. Furthermore, there is no conversion factor between the measures.

In claims 17, 30 and 51 the scope of the limitations, "An organic die bonding film having a peel strength of 0.5  $\text{kgf}/(5 \text{ mm} \times 5 \text{ mm chip})$  or higher," "a peel strength of 0.5  $\text{kgf}/(5 \text{ mm} \times 5 \text{ mm chip})$  or higher," and, "An organic die bonding film with a peel strength of 0.5  $\text{kgf}/(5 \text{ mm} \times 5 \text{ mm chip})$  or higher," respectively, are indeterminable, and the limitations appears to be contrary to scientific convention because peel strength is a characteristic of the adhesive bond of plural materials and not a property of

a film; therefore, the film cannot have a peel strength. See ASTM standard D 903-98.

In claim 19, the term "silicon resin" not an art recognized term, and it appears to be incorrect.

In the rejections *infra*, reference labels are generally recited only for the first recitation of identical claim language.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the

contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 17, 19-25, 31, 33, 37, 39-45, 47, 49 and 51-63 are rejected under 35 U.S.C. 102(a) as anticipated by Morita (5406124) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Morita (5406124).

At column 3, line 63 to column 4, line 35; column 7, lines 6-9; column 8, lines 1-8 and 24-47; column 9, lines 14-35; column 10, lines 14-15; column, 11, lines 1-14, 25, 42-43 and 60-61; column 12, lines 34-39; column 13, lines 20-21; column 14, lines 3-14 and 40-46; column 16, lines 18-34; column 17, lines 13-14; and column 18, lines 1-10 and 29-30, Morita teaches the following:

An organic die-bonding film 42 having a peel strength of  $67\text{g}/10\text{mm}^2$  chip when a semiconductor 1 has been bonded to a support member 2 with said film under conditions of  $250^\circ\text{C}$ – $450^\circ\text{C}$  temperature and pressure of 0.1–30  $\text{gf}/\text{mm}^2$ , wherein said film comprises an organic material selected from the group consisting of epoxy resin, silicone resin, acrylic resin, and polyimide resin, wherein the film has a modulus of elasticity of 10 Mpa or



less at a temperature of 250°C, having a water absorption of 1.5% by volume or less, having a residual volatile component in an amount of not more than 3.0% by weight, wherein the film is a self-supporting film, wherein the film has a single layer structure, wherein said film comprises a polyimide resin, wherein said material is an organic material comprising an epoxy resin, the film further comprising a metal filler, and the film made by a process comprising the steps of coating a varnish on a carrier film and peeling the die bonding film from said carrier film.

An organic die-bonding single layer film 42 having the property of bonding a semiconductor chip to a support member under conditions of 250°C–450°C temperature and pressure of 0.1–30 gf/mm<sup>2</sup>, and having a modulus of elasticity of 10 MPa or less at a temperature of 250°C, wherein the film comprises an organic material selected from the group consisting of epoxy resin, silicon resin, acrylic resin, silicone resin and polyimide resin; having a residual volatile component in an amount of not more than 3.0% by weight, having a water absorption of 1.5% by volume or less.

An organic die-bonding film 42 having a peel strength of 67g/10mm<sup>2</sup> chip when a semiconductor 1 has been bonded to a support member 2 with said film under conditions of 250°C temperature and pressure of 0.1–30

gf/mm<sup>2</sup>, wherein said film comprises an organic material that includes epoxy resin, and polyimide resin.

An organic die-bonding single layer film 42 having the property of bonding a semiconductor chip to a support member under conditions of 250°C temperature and pressure of 0.1-30 gf/mm<sup>2</sup>, and having a modulus of elasticity of 10 MPa or less at a temperature of 250°C, wherein the film comprises an organic material that includes epoxy resin and polyimide resin.

To further clarify the teaching of a water absorption of 1.5% by volume or less, the teaching of Morita of "less than 1.2%" anticipates this limitation. In particular, although Morita does not appear to explicitly specify whether the measure is by volume or by weight, both specific values of 1.2% by volume and 1.2% by weight fall within the claimed range of 1.5% by volume or less. Moreover, both ranges of 1.2% by volume or less and 1.2% by weight or less fall within the claimed range because a common lower limit of the ranges is equal to zero percent.

In the alternative, Morita teaches that percent water absorption is a result-effective variable affecting adhesive strength, and specifically, that minimal water absorption is desirable. Therefore, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to

choose the particular claimed percent water absorption because applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the process would possess utility using another water absorption. Indeed, it has been held that optimization of range limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See MPEP 2144.05(II): "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'" In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). See also In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969), Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989), and In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990). As set forth in MPEP 2144.05(III), "Applicant can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. 'The law is replete with cases in which the

difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.’ In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results.”

To further clarify the teaching of a void volume of 10% or less in terms of voids present in the material, as cited, Morita teaches a void volume of 0%: “This can prevent . . . the volatilization of moisture produced . . . from producing void in the adhesive layer.”

In the alternative, Morita teaches that void volume is a result-effective variable affecting adhesive strength, and specifically, that minimal void volume is desirable. Therefore, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed void volume limitation because applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the process would possess utility using another void volume.

To further clarify the teaching that the film is a self-supporting film, this is an inherent property of the film because the film is inherently characterized by self-support and capable of supporting itself or its own weight. As illustrated in Figure 3, the free upper film 42 portion is self-supported (held up) by itself. In the interest of compact prosecution, it is noted that self-support does not preclude additional support as in the manner of a self-supporting wall.

Although Morita does not appear to explicitly teach the process limitations, "a film made by a process comprising the steps of coating a varnish on a carrier film and peeling the die bonding film from said carrier film," the film of Morita inherently possesses the structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

Also, although Morita does not appear to explicitly disclose the process limitations wherein the film is synthesized from the particular claimed combinations of 1,2-(ethylene)bis(trimellitate anhydride), bis(4-amino-3,5-dimethylphenyl)methane, 4,4'-diaminodiphenyl ether, 2,2-bis[4-(4-aminophenoxy)phenyl] propane and 1,10-(decamethylene)bis(trimellitate anhydride), these process limitation do not structurally limit the product of Morita, and the product of Morita could be made by other processes. To

further clarify, the processes do not limit the product to any particular structure, such as a structure comprising 1,2-(ethylene)bis(trimellitate anhydride), bis(4-amino-3,5-dimethylphenyl)methane, 4,4'-diaminodiphenyl ether, 2,2-bis[4-(4-aminophenoxy)phenyl] propane and 1,10-(decamethylene)bis(trimellitate anhydride), because the processes merely recite precursor materials which are not necessarily present in the product made by the processes.

In addition, the limitation "having a peel strength of 0.5 kgf/(5 mm x 5 mm chip) or higher when a semiconductor has been bonded to a support member with said film under conditions of 100-250°C temperature and pressure of 0.1-30 gf/mm<sup>2</sup>" is a statement of intended use of the product which does not result in a structural difference between the claimed product and the product of Morita. Further, because the product of Morita has the same structure as the claimed product, it is inherently capable of being used for the intended use; namely, for the intended use of being bonded to a support member, the bond (and not the film) having a particular intended peel strength under particular intended bonding conditions, and the statement of intended use does not patentably distinguish the claimed product from the product of Morita. The manner in which a product operates is not germane to the issue of patentability of the product; Ex parte Wikdahl

10 USPQ 2d 1546, 1548 (BPAI 1989); Ex parte McCullough 7 USPQ 2d 1889, 1891 (BPAI 1988); In re Finsterwalder 168 USPQ 530 (CCPA 1971); In re Casey 152 USPQ 235, 238 (CCPA 1967). And, claims directed to product must be distinguished from the prior art in terms of structure rather than function. In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does [or is intended to do]." Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Moreover, the transitional claim language *comprising* encompasses additional unrecited elements such as additional structure and process steps which can further render the claimed film capable of being used for the intended uses.

Likewise, the limitation, "having the property of bonding a semiconductor chip to a support member under conditions of 100-250°C temperature and pressure of 0.1-30 gf/mm<sup>2</sup>" is a statement of intended use of the product which does not result in a structural difference between the claimed product and the product of Morita. Further, because the product of Morita has the same structure as the claimed product, it is inherently capable of being used for the intended use; namely, for the intended use of bonding a semiconductor chip under particular intended bonding conditions, and the statement of intended use does not patentably distinguish the

claimed product from the product of Morita. Moreover, the transitional claim language *comprising* encompasses additional unrecited elements such as additional structure and process steps which can further render the claimed film capable of being used for the intended uses.

In the alternative, although Morita teaches a film having a peel strength, Morita does not appear to literally teach that the film has a peel strength of 0.5 kgf/(5 mm x 5 mm chip) or higher. Furthermore, it is indeterminable if the largest explicitly taught peel strength of Morita; namely a peel strength of 67g/10mm<sup>2</sup> chip, is equivalent to the claimed peel strength of 0.5 kgf/(5 mm x 5 mm chip) or higher because there is no conversion factor between the two different peel strength expressions. Nonetheless, as cited, Morita teaches that an increase in peel strength is desirable, and it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed peel strength range because applicant has not disclosed that the range is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the product and process would possess utility using another range.



Claims 18, 26-30, 32, 34, 38, 46, 48, 50 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita as applied to claims 17, 19-25, 31, 33, 37, 39-45, 47, 49 and 51-63 *supra*, and further in combination with Hozoji (JP05218107).

As cited *supra*, Morita discloses the following:

An organic die-bonding film having the property of bonding a semiconductor chip to a support member under conditions of 250°C temperature and pressure of 0.1-30 gf/mm<sup>2</sup>, wherein the film has a water absorption of 1.5% by volume or less, a modulus of elasticity of 10 MPa or less at a temperature of 250°C, a void volume of 10% or less in terms of voids present in the film and at an interface between said film and a support member at a stage where a semiconductor has been bonded to a support member by said film, a peel strength of 67g/10mm<sup>2</sup> chip at a stage where a semiconductor has been bonded to a support member with said film, and a residual volatile component in an amount of not more than 3.0% by weight, wherein the film comprises an organic material selected from the group consisting of epoxy resin, silicone resin, acrylic resin, and polyimide resin, wherein the film is a self-supporting film, wherein the film has a single layer structure, wherein said film comprising a polyimide resin, wherein said film further comprises an epoxy resin, the film further comprising a metal filler,

the film made by a process comprising the steps of coating a varnish on a carrier film and peeling the die bonding material from said carrier film.

An organic die-bonding film having the property of bonding a semiconductor chip to a support member under conditions of 250°C temperature and pressure of 0.1-30 gf/mm<sup>2</sup>, wherein the film has a water absorption of 1.5% by volume or less, a modulus of elasticity of 10 MPa or less at a temperature of 250°C, a void volume of 10% or less in terms of voids present in the film and at an interface between said film and a support member at a stage where a semiconductor has been bonded to a support member by said film, bonds with a peel strength of 67g/10mm<sup>2</sup> chip at a stage where a semiconductor has been bonded to a support member with said film, and a residual volatile component in an amount of not more than 3.0% by weight, wherein the film comprises an organic material that includes epoxy resin and polyimide resin.

However, Morita does not appear to explicitly disclose wherein the film having a saturation moisture absorption of 1.0% by volume or less.

Regardless, in the English abstract and Table 1, Hozoji teaches this limitation. Furthermore, it would have been obvious to combine the invention of Hozoji with the invention of the applied prior art because, as taught by Hozoji, it would it would eliminate voids and facilitate adhesion.

Also, the limitations, "having the property of bonding a semiconductor chip to a support member under conditions of 100-250°C temperature and pressure of 0.1-30 gf/mm<sup>2</sup>, wherein the film has a water absorption of 1.5% by volume or less, a modulus of elasticity of 10 MPa or less at a temperature of 250°C, a void volume of 10% or less in terms of voids present in the film and at an interface between said film and a support member at a stage where a semiconductor has been bonded to a support member by said film, a peel strength of 0.5 kgf/(5 mm x 5 mm chip) or higher at a stage where a semiconductor has been bonded to a support member with said film," are statements of intended use of the product which do not result in a structural difference between the claimed product and the product of Morita and Hozoji. Further, because the product of Morita and Hozoji has the same structure as the claimed product, it is inherently capable of being used for the intended use; namely, for the intended use of bonding a semiconductor chip under particular intended bonding conditions resulting in particular intended properties, and the statement of intended use does not patentably distinguish the claimed product from the product of Morita and Hozoji. Moreover, the transitional claim language *comprising* encompasses additional unrecited elements such as additional structure and process steps

which can further render the claimed film capable of being used for the intended uses.

Claims 44 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita as applied to claims 17, 37 and 51 *supra*, and further in combination with Yoshida (5115089).

As cited, Morita teaches the process limitation that the polyimide is synthesized from 2,2-bis[4-(4-aminophenoxy)phenyl] propane.

However, Morita does not appear to explicitly teach the process limitation that the polyimide is synthesized from 1,10-(decamethylene)bis(trimellitate anhydride).

Nevertheless, as cited, Morita teaches that the polyimide is synthesized from the diamine 2,2-bis[4-(4-aminophenoxy)phenyl] propane in combination with a dianhydride, and at column 2, line 28 to column 3, line 33, Yoshida teaches a polyimide synthesized from the dianhydride 1,10-(decamethylene)bis(trimellitate anhydride) "DBTA" in combination with a diamine. Moreover, it would have been obvious to use for its intended purpose the dianhydride 1,10-(decamethylene)bis(trimellitate anhydride) of Yoshida as the dianhydride of the process of Morita because it would provide the dianhydride of Morita. Furthermore, it would have been obvious to use the dianhydride 1,10-(decamethylene)bis(trimellitate anhydride) of Yoshida

as the dianhydride of the process of Morita because Yoshida teaches that 1,10-(decamethylene)bis(trimellitate anhydride) is an equivalent of numerous of the dianhydrides explicitly taught by Morita such as 3,3',4,4'-benzophenotetracarboxylic dianhydride.

Claims 31, 40, 42, 53, 55, 60 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita as applied to claims 17, 37, 51 and 58 supra, and further in combination with Berger (4681928).

As cited, Morita teaches the process limitation that the polyimide is synthesized from 4,4'-diaminodiphenyl ether and 2,2-bis[4-(4-aminophenoxy)phenyl] propane.

However, Morita does not appear to explicitly teach the process limitation that the polyimide is synthesized from 1,2-(ethylene)bis(trimellitate anhydride).

Nevertheless, as cited, Morita teaches that the polyimide is synthesized from 4,4'-diaminodiphenyl ether and 2,2-bis[4-(4-aminophenoxy)phenyl] propane in combination with a dianhydride, and at column 4, line 54; column 6, lines 21-63; column 11, lines 26, 27 and 43; column 13, line 1 to column 18, line 2; and column 12, line 22, Berger teaches a polyimide synthesized from 4,4'-diaminodiphenyl ether and 2,2-bis[4-(4-aminophenoxy)phenyl] propane in combination with the

dianhydride 1,2-(ethylene)bis(trimellitate anhydride). Moreover, it would have been obvious to use for its intended purpose the dianhydride 1,2-(ethylene)bis(trimellitate anhydride) of Berger as the dianhydride of the process of Morita because it would provide the dianhydride of Morita. Furthermore, it would have been obvious to use the dianhydride 1,2-(ethylene)bis(trimellitate anhydride) of Berger as the dianhydride of the process of Morita because Berger teaches that 1,2-(ethylene)bis(trimellitate anhydride) is an equivalent of numerous of the dianhydrides explicitly taught by Morita such as 3,3',4,4'-benzophenotetracarboxylic dianhydride.

Also, although Morita does not appear to teach literally that the film is a self-supporting film, as cited, Berger teaches that the film is "unsupported." In addition, it would have been obvious to use an unsupported film as taught by Berger as the film of Morita because, as taught by Berger, it would be useful in unsupported applications.

Claims 43, 56, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita and Berger as applied to claims 40, 42, 53, 55, 60 and 62 *supra*, and further in combination with Yoshida (5115089).

Morita and Berger do not appear to explicitly teach the process limitation that the polyimide is synthesized from 1,10-(decamethylene)bis(trimellitate anhydride).

Nevertheless, as cited, the combination of Morita and Berger teaches the process limitation that the polyimide is synthesized from 1,2-(ethylene)bis(trimellitate anhydride) and 2,2-bis[4-(4-aminophenoxy)phenyl] propane in combination with a dianhydride (Morita: "dianhydrides can be used singly or as a mixture"), and as cited supra, Yoshida teaches a polyimide synthesized from the dianhydride 1,10-(decamethylene)bis(trimellitate anhydride) "DBTA" in combination with ("dianhydrides may be used in combination of two or more") a diamine and another dianhydride such as "dianhydride represented by the general formula . . . ethylenebistrimellitate." Moreover, it would have been obvious to use for its intended purpose the dianhydride 1,10-(decamethylene)bis(trimellitate anhydride) of Yoshida as the dianhydride of the process of Morita and Berger because it would provide the dianhydride of Morita and Berger. Furthermore, it would have been obvious to use the dianhydride 1,10-(decamethylene)bis(trimellitate anhydride) of Yoshida as the dianhydride of the process of Morita because Yoshida teaches that 1,10-(decamethylene)bis(trimellitate anhydride) is an equivalent of numerous of the dianhydrides explicitly taught by Morita and Berger such as 1,2-(ethylene)bis(trimellitate anhydride).

Claims 39, 52 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita and Berger as applied to claims 40, 42, 53, 55, 60 and 62 supra, and further in combination with Jackson (4965331).

Morita and Berger do not appear to explicitly teach the process limitation that the polyimide is synthesized from bis(4-amino-3,5-dimethylphenyl)methane.

Nevertheless, as cited, both Morita and Berger teach a polyimide synthesized from aromatic diamines, and at column 2, lines 41-59, Jackson teaches a polyimide synthesized from the aromatic diamine bis(4-amino-3,5-dimethylphenyl)methane. In addition, it would have been obvious to use for its intended purpose the aromatic diamine bis(4-amino-3,5-dimethylphenyl)methane of Jackson as the aromatic diamine of the process of Morita and Berger because it would provide the aromatic diamine of Morita and Berger. Furthermore, it would have been obvious to use the aromatic diamine bis(4-amino-3,5-dimethylphenyl)methane of Jackson as the aromatic diamine of the process of Morita and Berger because Jackson teaches that bis(4-amino-3,5-dimethylphenyl)methane is an equivalent of numerous of the aromatic diamines explicitly taught by both Morita and Berger such as m-phenylenediamine.



Claims 41, 54 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita and Berger as applied to claims 40, 42, 53, 55, 60 and 62, supra, and further in combination with Baumann (5296567).

Morita and Berger do not appear to explicitly teach that the polyimide is synthesized from bis(4-amino-3,5-diisopropylphenyl)methane.

Still, as cited, both Morita and Berger teach a polyimide synthesized from aromatic diamines, and at column 5, lines 1-5, Baumann teaches a polyimide synthesized from the aromatic diamine bis(4-amino-3,5-diisopropylphenyl)methane. In addition, it would have been obvious to use for its intended purpose the aromatic diamine bis(4-amino-3,5-diisopropylphenyl)methane of Baumann as the aromatic diamine of Morita and Berger because it would provide the aromatic diamine of Morita and Berger.

Applicant's amendment and remarks filed 4-14-4 have been fully considered and are addressed supra and infra.

**MPEP 2106 instructs:**

Office personnel must rely on the applicant's disclosure to properly determine the meaning of terms used in the claims. *Markman v. Westview Instruments*, 52 F.3d 967, 980, 34 USPQ2d 1321, 1330 (Fed. Cir.) (en banc), aff'd, U.S. , 116 S. Ct. 1384 (1996). An applicant is entitled to be his or her own lexicographer, and in many instances will provide an explicit definition for certain terms used in the claims. Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999) (meaning of words used in a claim is not construed in a "lexicographic vacuum, but in the context of the specification and drawings."). Office personnel should determine if the original disclosure provides a definition consistent with any assertions made by applicant. See, e.g., *In re Paulsen*, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1674

(Fed. Cir. 1994) (inventor may define specific terms used to describe invention, but must do so "with reasonable clarity, deliberateness, and precision" and, if done, must "set out his uncommon definition in some manner within the patent disclosure" so as to give one of ordinary skill in the art notice of the change" in meaning) (quoting *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1387-88, 21 USPQ2d 1383, 1386 (Fed. Cir. 1992)). Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention." *Multiform Desiccants Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998). If an applicant does not define a term in the specification, that term will be given its "common meaning." *Paulsen*, at 30 F. 3d 1480, 31 USPQ2d at 1674. If the applicant asserts that a term has a meaning that conflicts with the term's art-accepted meaning, Office personnel should encourage the applicant to amend the claim to better reflect what applicant intends to claim as the invention. If the application becomes a patent, it becomes prior art against subsequent applications. Therefore, it is important for later search purposes to have the patentee employ commonly accepted terminology, particularly for searching text-searchable database

Applicant contends that the term "peel strength" is "specifically defined" in the original disclosure.

This contention is respectfully traversed because an explicit definition is not provided in the original disclosure.

Also, applicant argues that "mass-force to area" is a conventional unit of peel strength.

This argument is respectfully traversed because the references which applicant relies on to support this argument do not disclose mass-force to area, instead, they disclose mass to area, and applicant has not otherwise supported this argument.

In addition, applicant maintains that the claimed peel strength "is obtained using the 17-degree peel strength test, described in the present application," and that, "Figure 2 of the present application illustrates that a push-pull gauge applies the test force at an angle of 17 degrees."

This is respectfully traversed because Figure 2 merely illustrates a 17 degree angle between a portion of the gauge and the chip, but does not illustrate that the gauge applies the test force at an angle of 17 degrees, nor is there description elsewhere in the original disclosure. To this end, the declarations filed on 4-14-4 do not overcome the rejections because they are opinions unsupported by proof or a showing of facts; hence, they essentially amounts to mere conjecture. Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989) (statement in publication dismissing the "preliminary identification of a human b - NGF - like molecule" in the prior art, even if considered to be an expert opinion, was inadequate to overcome the rejection based on that prior art because there was no factual evidence supporting the statement); In re Beattie, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992) (declarations of seven persons skilled in the art offering opinion evidence praising the merits of the claimed invention were found to have little value because of a lack of factual support); Ex parte George, 21 USPQ2d 1058 (Bd. Pat. App. & Inter. 1991) (conclusory statements that results were "unexpected," unsupported by objective factual evidence, were considered but were not found to be of substantial evidentiary value).

The Declaration under 37 CFR 1.132 filed 4-14-4 insufficient to overcome the rejection of claims 17-19, 21-34 and 37-64 for the following reasons:

The Declaration insufficient because it refers only to the system described in the instant application and not to the individual claims 51-64 of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP 716.

The Declaration is also insufficient because the objective evidence of nonobviousness is not commensurate in scope with the claims. In particular, the showing of unexpected results are not reviewed to determine whether the results occur over the entire claimed process, property or material ranges for each claim. In re Clemens, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980).

The Declaration is also insufficient because the objective evidence of nonobviousness is not commensurate in scope with the claims because the Declaration is directed to a process and the claims are drawn to a product.

Similarly, the Declaration is insufficient because it does not compare the claimed invention with the closest prior art which is commensurate scope with the claims. For example, polyimide of the claimed invention is compared to a different polyimide of the closest prior art; yet, both the

closest prior art and the instant claims recite an identical polyimide. For that matter, Morita explicitly teaches the structural and composition limitations of the instant claims; therefore, the closest prior art of Morita includes all of the structural and composition limitations of the claims.

Also, at column lines 65-68, Morita teaches unexpected results; therefore, the unexpected results alleged in the Declaration are not unexpected.

In view of the foregoing, when all of the evidence presented in the Declaration is considered, the totality of the rebuttal evidence nonobviousness fails to outweigh the evidence of obviousness.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Head SAE Linda Hodge-Taylor whose telephone number is 571-272-1585.**

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is (703) 872-9306.

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A handwritten signature in black ink, appearing to read 'JN E W'.

David E. Graybill  
Primary Examiner  
Art Unit 2827

D.G.  
26-Jun-04